



CPI-004DVCP3CN

SEQUENCE LISTING

<110> Johnson, Gary L.

<120> Method And Product For Regulating Cell Responsiveness To External Signals

<130> CPI-004DVCP3CN

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<150> 09/608,890

<151> 2000-30-06

<150> 08/440,421

<151> 1995-05-15

<150> 08/323,460

<151> 1994-10-14

<150> 08/049,254

<151> 1993-04-15

<150> 08/410,602

<151> 1995-03-24

<150> 08/472,934

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<170> PatentIn Ver. 2.0

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NOV 24 2004

TECH CENTER 1600/2900

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Phe	Cys	Ile	His	Leu	Leu	Phe	Val	Met	Leu	Arg	Val	Phe	Gln	Leu	Glu	
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Val Gly Gln His Tyr Leu Tyr Lys Lys Pro Gly Lys Gln Asn Leu His
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Gly Ser Gly Ser Cys Pro Ser Leu Asp Ser Pro Leu Asp Gly Glu Ser
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Tyr Pro Lys Ser Arg Met Pro Arg Ala Gln Ser Tyr Pro Asp Asn His
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Gln Glu Phe Thr Asp Tyr Asp Asn Pro Ile Phe Glu Lys Phe Gly Lys
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Thr Ser Phe Arg Ser Pro Val Ser Phe Ser Pro Thr Asp His Ser Leu	
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Asn Ile Glu Glu Glu Lys Arg Ile Leu Gln Val Thr Arg Pro Val Lys
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Asp Leu His Tyr Thr Asn Asn Glu Leu Val Ile Pro Leu Thr Thr Gln
85 90 95

Asp Asp Leu Asp Lys Ala Val Glu Leu Leu Asp Arg Ser Ile His Met
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Lys Ser Leu Lys Ile Leu Leu Val Val Asn Gly Ser Thr Gln Ala Thr
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Asn Leu Glu Pro Ser Pro Ser Pro Glu Asp Leu Asn Asn Thr Pro Leu
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Gly Ala Glu Arg Lys Lys Arg Leu Ser Val Val Gly Pro Pro Asn Arg
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Trp Ser Val Ala Cys Thr Val Val Glu Met Leu Thr Glu Lys Pro Pro  
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Trp Ala Glu Phe Glu Ala Met Ala Ala Ile Phe Lys Ile Ala Thr Gln  
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Pro Thr Asn Pro Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp  
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Arg Ile Arg Arg Arg Gly Ser Asp Ile Asp Asn Pro Thr Leu Thr Val	
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Thr Asp Ile Ser Pro Pro Ser Arg Ser Pro Arg Ala Pro Thr Asn Trp	
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Cys	Tyr	Asp	Val	Asp	Thr	Gly	Arg	Glu	Leu	Ala	Val	Lys	Gln	Val	Gln	
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Phe	Asn	Pro	Glu	Ser	Pro	Glu	Thr	Ser	Lys	Glu	Val	Asn	Ala	Leu	Glu	
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Cys	Glu	Ile	Gln	Leu	Leu	Lys	Asn	Leu	Leu	His	Glu	Arg	Ile	Val	Gln	
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Gly	Met	Lys	Ser	Val	Thr	Gly	Thr	Pro	Tyr	Trp	Met	Ser	Pro	Glu	Val	
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Ile	Ser	Gly	Glu	Gly	Tyr	Gly	Arg	Lys	Ala	Asp	Ile	Trp	Ser	Val	Ala	
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tgt	act	gtg	gta	gaa	atg	cta	act	gaa	aag	cca	cct	tgg	gct	gaa	ttt	2157
Cys	Thr	Val	Val	Glu	Met	Leu	Thr	Glu	Lys	Pro	Pro	Trp	Ala	Glu	Phe	
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Glu	Ala	Met	Ala	Ala	Ile	Phe	Lys	Ile	Ala	Thr	Gln	Pro	Thr	Asn	Pro	
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Lys	Leu	Pro	Pro	His	Val	Ser	Asp	Tyr	Thr	Arg	Asp	Phe	Leu	Lys	Arg	
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Ile	Phe	Val	Glu	Ala	Lys	Leu	Arg	Pro	Ser	Ala	Glu	Glu	Leu	Leu	Arg	
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cac	atg	ttt	gtg	cat	tat	cac	tagcagcggc	ggcttcgggc	ctccaccagc							2352
His	Met	Phe	Val	His	Tyr	His										
		615														



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 Lys Ser Leu Lys Ile Leu Leu Val Val Asn Gly Ser Thr Gln Ala Thr  
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 Gly Ala Glu Arg Lys Lys Arg Leu Ser Val Val Gly Pro Pro Asn Arg  
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 Asp Arg Ser Ser Pro Pro Gly Tyr Ile Pro Asp Ile Leu His Gln  
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 Pro Glu Asn Ser Gly Ser Gly Ser Cys Pro Ser Leu Asp Ser Pro Leu  
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 Pro Asp Asn His Gln Glu Phe Thr Asp Tyr Asp Asn Pro Ile Phe Glu  
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 Lys Phe Gly Lys Gly Gly Thr Tyr Pro Arg Arg Tyr His Val Ser Tyr  
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 His His Gln Glu Tyr Asn Asp Gly Arg Lys Thr Phe Pro Arg Ala Arg  
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 Arg Thr Gln Gly Thr Ser Phe Arg Ser Pro Val Ser Phe Ser Pro Thr

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Tyr Asp Asp Ser Arg Ile Arg Arg Arg Gly Ser Asp Ile Asp Asn Pro 325 330 335		
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Pro Thr Asn Trp Arg Leu Gly Lys Leu Leu Gly Gln Gly Ala Phe Gly 355 360 365		
Arg Val Tyr Leu Cys Tyr Asp Val Asp Thr Gly Arg Glu Leu Ala Val 370 375 380		
Lys Gln Val Gln Phe Asn Pro Glu Ser Pro Glu Thr Ser Lys Glu Val 385 390 395 400		
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Arg Ile Val Gln Tyr Tyr Gly Cys Leu Arg Asp Pro Gln Glu Lys Thr 420 425 430		
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His Arg Asp Ile Lys Gly Ala Asn Ile Leu Arg Asp Ser Thr Gly Asn 485 490 495		
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Ser Pro Glu Val Ile Ser Gly Glu Gly Tyr Gly Arg Lys Ala Asp Ile 530 535 540		
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Pro Thr Asn Pro Lys Leu Pro Pro His Val Ser Asp Tyr Thr Arg Asp 580 585 590		
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&lt;211&gt; 3089

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;220&gt;

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&lt;400&gt; 9

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Asp Ile Asn Thr Ile Tyr Gln Ala Pro Glu Pro Arg Ser Arg His Leu
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Ser Val Ser Ser Gln Asn Pro Gly Arg Ser Ser Pro Pro Pro Gly Tyr
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Val Pro Glu Arg Gln Gln His Ile Ala Arg Gln Gly Ser Tyr Thr Ser
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tcc ttg gac agg tca gca gac agc cca tcc ttc agg aaa tca caa atg Ser Leu Asp Arg Ser Ala Asp Ser Pro Ser Phe Arg Lys Ser Gln Met 230 235 240 245	1134
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Glu	Cys	Ser	Asp	Arg	Glu	Thr	Gln	Leu	Tyr	Asp	Lys	Gly	Val	Lys	Gly	260	265	270	
Gly	Thr	Tyr	Pro	Arg	Arg	Tyr	His	Val	Ser	Val	His	His	Lys	Asp	Tyr	275	280	285	
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 Gly Arg Glu Leu Ala Ser Lys Gln Val Gln Phe Asp Pro Asp Ser Pro  
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 Glu Thr Ser Lys Glu Val Ser Ala Leu Glu Cys Glu Ile Gln Leu Leu  
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 Asp Arg Ala Glu Lys Ile Leu Thr Ile Phe Met Glu Tyr Met Pro Gly  
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 Gly Ser Val Lys Asp Gln Leu Lys Ala Tyr Gly Ala Leu Thr Glu Ser  
 450 455 460  
 Val Thr Arg Lys Tyr Thr Arg Gln Ile Leu Glu Gly Met Ser Tyr Leu  
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 His Ser Asn Met Ile Val His Arg Asp Ile Lys Gly Ala Asn Ile Leu  
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 Arg Asp Ser Ala Gly Asn Val Lys Leu Gly Asp Phe Gly Ala Ser Lys  
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 Gly Arg Lys Ala Asp Val Trp Ser Leu Gly Cys Thr Val Val Glu Met  
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 Leu Thr Glu Lys Pro Pro Trp Ala Glu Tyr Glu Ala Met Ala Ala Ile  
 565 570 575  
 Phe Lys Ile Ala Thr Gln Pro Thr Asn Pro Gln Leu Pro Ser His Ile  
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 Ser Glu His Gly Arg Asp Phe Leu Arg Arg Ile Phe Val Glu Ala Arg  
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 Val Tyr  
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&lt;211&gt; 3913

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (747)..(3416)

&lt;220&gt;

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gaacagaggg tgccggggag ccttccctct tgagtatcaa acagctagtg cgagagtgtg 720
aagaggctct aaaggcgagg ctctg atg aag cag tat tac cag ttc atg ctg 773
                        Met Lys Gln Tyr Tyr Gln Phe Met Leu
                        1           5

cag gag gtc ctg ggc gga ctg gag aag acc gac tgc aac atg gat gcc 821
Gln Glu Val Leu Gly Gly Leu Glu Lys Thr Asp Cys Asn Met Asp Ala
 10                15                20                25

ttt gag gag gac ctg cag aag atg ctg atg gtg tat ttt gat tac atg 869
Phe Glu Glu Asp Leu Gln Lys Met Leu Met Val Tyr Phe Asp Tyr Met
 30                35                40

aga agc tgg atc caa atg cta cag cag tta cct cag gct tcc cat agc 917
Arg Ser Trp Ile Gln Met Leu Gln Gln Leu Pro Gln Ala Ser His Ser
 45                50                55

tta aaa aac ctg cta gaa gag gaa tgg aat ttc acc aaa gaa ata acc 965
Leu Lys Asn Leu Leu Glu Glu Glu Trp Asn Phe Thr Lys Glu Ile Thr
 60                65                70

cat tat atc cgt ggc gga gaa gcg cag gct gga aag ctt ttc tgt gac 1013
His Tyr Ile Arg Gly Gly Glu Ala Gln Ala Gly Lys Leu Phe Cys Asp
 75                80                85

atc gca ggg atg ctg ctg aaa tcc aca ggg agc ttt ctg gaa tcc ggc 1061
Ile Ala Gly Met Leu Leu Lys Ser Thr Gly Ser Phe Leu Glu Ser Gly
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ctg cag gag agc tgt gct gag ctg tgg acc agn gcc gac gac aac ggt 1109
Leu Gln Glu Ser Cys Ala Glu Leu Trp Thr Xaa Ala Asp Asp Asn Gly
 110                115                120

gct gcc gac gag cta agg aga tct gtc atc gag atc agc cga gca ctc 1157
Ala Ala Asp Glu Leu Arg Arg Ser Val Ile Glu Ile Ser Arg Ala Leu
 125                130                135

aag gag ctc ttc cac gaa gcc agg gaa aga gcc tcc aag gcc ctg ggc 1205

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Lys	Glu	Leu	Phe	His	Glu	Ala	Arg	Glu	Arg	Ala	Ser	Lys	Ala	Leu	Gly		
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Phe	Ala	Lys	Met	Leu	Arg	Lys	Asp	Leu	Glu	Ile	Ala	Ala	Glu	Phe	Val		
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cta	tct	gca	tca	gcc	cga	gag	ctc	ctg	gac	gct	ctg	aaa	gca	aag	cag	1301	
Leu	Ser	Ala	Ser	Ala	Arg	Glu	Leu	Leu	Asp	Ala	Leu	Lys	Ala	Lys	Gln		
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Tyr	Val	Lys	Val	Gln	Ile	Pro	Gly	Leu	Glu	Asn	Leu	His	Val	Phe	Val		
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ccc	gac	agc	ctc	gct	gag	gag	aag	aaa	att	att	ttg	cag	cta	ctc	aat	1397	
Pro	Asp	Ser	Leu	Ala	Glu	Glu	Lys	Lys	Ile	Ile	Leu	Gln	Leu	Leu	Asn		
			205					210					215				
gct	gcc	aca	gga	aag	gac	tgc	tca	aag	gat	cca	gac	gac	gtc	ttc	atg	1445	
Ala	Ala	Thr	Gly	Lys	Asp	Cys	Ser	Lys	Asp	Pro	Asp	Asp	Val	Phe	Met		
		220					225					230					
gat	gcc	ttc	ctg	ctc	ctg	acc	aag	cat	ggg	gac	cga	gcc	cgt	gac	tca	1493	
Asp	Ala	Phe	Leu	Leu	Leu	Thr	Lys	His	Gly	Asp	Arg	Ala	Arg	Asp	Ser		
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gaa	gat	ggc	tgg	ggc	aca	tgg	gaa	gct	cgg	gct	gtc	aaa	att	gtg	cct	1541	
Glu	Asp	Gly	Trp	Gly	Thr	Trp	Glu	Ala	Arg	Ala	Val	Lys	Ile	Val	Pro		
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cag	gtg	gag	act	gtg	gac	acc	ctg	aga	agc	atg	cag	gtg	gac	aac	ctt	1589	
Gln	Val	Glu	Thr	Val	Asp	Thr	Leu	Arg	Ser	Met	Gln	Val	Asp	Asn	Leu		
				270					275					280			
ctg	ctg	gtt	gtc	atg	gag	tct	gct	cac	ctc	gta	ctt	cag	aga	aaa	gcc	1637	
Leu	Leu	Val	Val	Met	Glu	Ser	Ala	His	Leu	Val	Leu	Gln	Arg	Lys	Ala		
			285					290					295				
ttc	cag	cag	tcc	att	gag	ggg	ctg	atg	act	gta	cgc	cat	gag	cag	aca	1685	
Phe	Gln	Gln	Ser	Ile	Glu	Gly	Leu	Met	Thr	Val	Arg	His	Glu	Gln	Thr		
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tct	agc	cag	ccc	atc	atc	gcc	aaa	ggg	ttg	cag	cag	ctc	aag	aac	gat	1733	
Ser	Ser	Gln	Pro	Ile	Ile	Ala	Lys	Gly	Leu	Gln	Gln	Leu	Lys	Asn	Asp		
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gca	ctt	gag	cta	tgc	aac	aga	atc	agc	gat	gcc	atc	gac	cgt	gtg	gac	1781	
Ala	Leu	Glu	Leu	Cys	Asn	Arg	Ile	Ser	Asp	Ala	Ile	Asp	Arg	Val	Asp		
		330			335					340					345		
cac	atg	ttc	acc	ctg	gag	ttc	gat	gct	gag	gtc	gag	gag	tct	gag	tcg	1829	
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gcc	acg	ctg	cag	cag	tac	tac	cga	gaa	gcc	atg	att	cag	ggc	tac	aac	1877	
Ala	Thr	Leu	Gln	Gln	Tyr	Tyr	Arg	Glu	Ala	Met	Ile	Gln	Gly	Tyr	Asn		
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Phe	Gly	Phe	Glu	Tyr	His	Lys	Glu	Val	Val	Arg	Leu	Met	Ser	Gly	Glu		
		380					385					390					
ttc	agg	cag	aag	ata	gga	gac	aaa	tat	ata	acg	ttc	gcc	cag	aag	tgg	1973	
Phe	Arg	Gln	Lys	Ile	Gly	Asp	Lys	Tyr	Ile	Thr	Phe	Ala	Gln	Lys	Trp		
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Arg	Trp	Ala	Thr	Gln	Gly	Phe	Asp	Phe	Leu	Gln	Ala	Ile	Glu	Pro	Ala	
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Phe	Ile	Ser	Ala	Leu	Pro	Glu	Asp	Asp	Phe	Leu	Ser	Leu	Gln	Ala	Leu	
			445					450					455			
atg	aat	gag	tgc	atc	ggg	cac	gtc	ata	gga	aag	cca	cac	agc	cct	gtc	2165
Met	Asn	Glu	Cys	Ile	Gly	His	Val	Ile	Gly	Lys	Pro	His	Ser	Pro	Val	
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aca	gct	atc	cat	cgg	aac	agc	ccc	cgc	cct	gtg	aag	gtg	ccc	cga	tgc	2213
Thr	Ala	Ile	His	Arg	Asn	Ser	Pro	Arg	Pro	Val	Lys	Val	Pro	Arg	Cys	
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cac	agt	gac	cct	cct	aac	cct	cac	ctc	atc	atc	ccg	act	cca	gag	gga	2261
His	Ser	Asp	Pro	Pro	Asn	Pro	His	Leu	Ile	Ile	Pro	Thr	Pro	Glu	Gly	
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Phe	Arg	Gly	Ser	Ser	Val	Pro	Glu	Asn	Asp	Arg	Leu	Ala	Ser	Ile	Ala	
				510					515					520		
gca	gaa	ctg	cag	ttc	agg	tct	ctg	agt	cgg	cac	tca	agc	ccc	acg	gaa	2357
Ala	Glu	Leu	Gln	Phe	Arg	Ser	Leu	Ser	Arg	His	Ser	Ser	Pro	Thr	Glu	
			525					530					535			
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Glu	Arg	Asp	Glu	Pro	Ala	Tyr	Pro	Arg	Ser	Asp	Ser	Ser	Gly	Ser	Thr	
		540					545					550				
cgg	aga	agc	tgg	gaa	ctt	cga	aca	ctc	atc	agc	cag	acc	aaa	gac	tcg	2453
Arg	Arg	Ser	Trp	Glu	Leu	Arg	Thr	Leu	Ile	Ser	Gln	Thr	Lys	Asp	Ser	
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Ala	Ser	Lys	Gln	Gly	Pro	Ile	Glu	Ala	Ile	Gln	Lys	Ser	Val	Arg	Leu	
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Phe	Glu	Glu	Arg	Arg	Tyr	Arg	Glu	Met	Arg	Arg	Lys	Asn	Ile	Ile	Gly	
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Gln	Val	Cys	Asp	Thr	Pro	Lys	Ser	Tyr	Asp	Asn	Val	Met	His	Val	Gly	
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Leu	Arg	Lys	Val	Thr	Phe	Lys	Trp	Gln	Arg	Gly	Asn	Lys	Ile	Gly	Glu	
		620					625					630				
gga	cag	tat	gga	aaa	gta	tac	acc	tgc	atc	agt	gtt	gac	aca	ggg	gag	2693
Gly	Gln	Tyr	Gly	Lys	Val	Tyr	Thr	Cys	Ile	Ser	Val	Asp	Thr	Gly	Glu	
	635					640					645					
ctg	atg	gcc	atg	aag	gag	att	cga	ttt	cag	cct	aac	gac	cac	aag	act	2741
Leu	Met	Ala	Met	Lys	Glu	Ile	Arg	Phe	Gln	Pro	Asn	Asp	His	Lys	Thr	
					655					660					665	
atc	aag	gag	act	gca	gac	gag	ttg	aaa	ata	ttt	gaa	ggc	atc	aag	cac	2789
Ile	Lys	Glu	Thr	Ala	Asp	Glu	Leu	Lys	Ile	Phe	Glu	Gly	Ile	Lys	His	
				670					675					680		
ccc	aac	ctg	gtc	cgg	tat	ttt	ggc	gtg	gag	ctt	cac	agg	gaa	gag	atg	2837

Pro	Asn	Leu	Val	Arg	Tyr	Phe	Gly	Val	Glu	Leu	His	Arg	Glu	Glu	Met	
			685					690					695			
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Tyr	Ile	Phe	Met	Glu	Tyr	Cys	Asp	Glu	Gly	Thr	Leu	Glu	Glu	Val	Ser	
		700					705					710				
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Arg	Leu	Gly	Leu	Gln	Glu	His	Val	Ile	Arg	Leu	Tyr	Thr	Lys	Gln	Ile	
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Thr	Val	Ala	Ile	Asn	Val	Leu	His	Glu	His	Gly	Ile	Val	His	Arg	Asp	
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Ile	Lys	Gly	Ala	Asn	Ile	Phe	Leu	Thr	Ser	Ser	Gly	Leu	Ile	Lys	Leu	
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gga	gat	ttt	gga	tgc	tct	gta	aaa	ctt	aaa	aac	aac	gcc	cag	acc	atg	3077
Gly	Asp	Phe	Gly	Cys	Ser	Val	Lys	Leu	Lys	Asn	Asn	Ala	Gln	Thr	Met	
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ccc	gga	gag	gtg	aac	agc	acc	cta	ggg	aca	gca	gct	tac	atg	gcc	cct	3125
Pro	Gly	Glu	Val	Asn	Ser	Thr	Leu	Gly	Thr	Ala	Ala	Tyr	Met	Ala	Pro	
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Glu	Val	Ile	Thr	Arg	Ala	Lys	Gly	Glu	Gly	His	Gly	Arg	Ala	Ala	Asp	
		795				800					805					
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Ile	Trp	Ser	Leu	Gly	Cys	Val	Val	Ile	Glu	Met	Val	Thr	Gly	Lys	Arg	
					815					820					825	
cct	tgg	cat	gag	tat	gaa	cac	aac	ttt	cag	att	atg	tac	aag	gtg	ggg	3269
Pro	Trp	His	Glu	Tyr	Glu	His	Asn	Phe	Gln	Ile	Met	Tyr	Lys	Val	Gly	
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Met	Gly	His	Lys	Pro	Pro	Ile	Pro	Glu	Arg	Leu	Ser	Pro	Glu	Gly	Lys	
			845					850					855			
gcc	ttt	ctc	tgc	cac	tgc	ctg	gaa	agt	gac	ccg	aag	ata	cgg	tgg	aca	3365
Ala	Phe	Leu	Ser	His	Cys	Leu	Glu	Ser	Asp	Pro	Lys	Ile	Arg	Trp	Thr	
		860					865					870				
gcc	agc	cag	ctc	ctc	gac	cac	gct	ttt	gtc	aag	gtt	tgc	aca	gat	gaa	3413
Ala	Ser	Gln	Leu	Leu	Asp	His	Ala	Phe	Val	Lys	Val	Cys	Thr	Asp	Glu	
		875				880					885					
gag	tgaagtgaac	cagtcctgtgg	cctagtagtg	tgtggacaga	atcccgtgat											3466
Glu																
																890
cactactgta	tgtaatat	acataaagac	tgcagcgag	gcggccttcc	taacctccca											3526
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3913

&lt;210&gt; 12

&lt;211&gt; 890

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;220&gt;

&lt;223&gt; At position 116, Xaa = any amino acid

&lt;400&gt; 12

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Met	Leu	Met	Val	Tyr	Phe	Asp	Tyr	Met	Arg	Ser	Trp	Ile	Gln	Met	Leu
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Gln	Gln	Leu	Pro	Gln	Ala	Ser	His	Ser	Leu	Lys	Asn	Leu	Leu	Glu	Glu
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Glu	Trp	Asn	Phe	Thr	Lys	Glu	Ile	Thr	His	Tyr	Ile	Arg	Gly	Gly	Glu
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Ala	Gln	Ala	Gly	Lys	Leu	Phe	Cys	Asp	Ile	Ala	Gly	Met	Leu	Leu	Lys
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Ser	Thr	Gly	Ser	Phe	Leu	Glu	Ser	Gly	Leu	Gln	Glu	Ser	Cys	Ala	Glu
			100					105					110		

Leu	Trp	Thr	Xaa	Ala	Asp	Asp	Asn	Gly	Ala	Ala	Asp	Glu	Leu	Arg	Arg
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Ser	Val	Ile	Glu	Ile	Ser	Arg	Ala	Leu	Lys	Glu	Leu	Phe	His	Glu	Ala
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Arg	Glu	Arg	Ala	Ser	Lys	Ala	Leu	Gly	Phe	Ala	Lys	Met	Leu	Arg	Lys
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Asp	Leu	Glu	Ile	Ala	Ala	Glu	Phe	Val	Leu	Ser	Ala	Ser	Ala	Arg	Glu
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Leu	Leu	Asp	Ala	Leu	Lys	Ala	Lys	Gln	Tyr	Val	Lys	Val	Gln	Ile	Pro
		180						185					190		

Gly	Leu	Glu	Asn	Leu	His	Val	Phe	Val	Pro	Asp	Ser	Leu	Ala	Glu	Glu
		195					200					205			

Lys	Lys	Ile	Ile	Leu	Gln	Leu	Leu	Asn	Ala	Ala	Thr	Gly	Lys	Asp	Cys
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Ser	Lys	Asp	Pro	Asp	Asp	Val	Phe	Met	Asp	Ala	Phe	Leu	Leu	Leu	Thr
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Lys	His	Gly	Asp	Arg	Ala	Arg	Asp	Ser	Glu	Asp	Gly	Trp	Gly	Thr	Trp
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Glu	Ala	Arg	Ala	Val	Lys	Ile	Val	Pro	Gln	Val	Glu	Thr	Val	Asp	Thr
			260					265					270		

Leu	Arg	Ser	Met	Gln	Val	Asp	Asn	Leu	Leu	Leu	Val	Val	Met	Glu	Ser
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Ala His Leu Val Leu Gln Arg Lys Ala Phe Gln Gln Ser Ile Glu Gly  
 290 295 300  
 Leu Met Thr Val Arg His Glu Gln Thr Ser Ser Gln Pro Ile Ile Ala  
 305 310 315 320  
 Lys Gly Leu Gln Gln Leu Lys Asn Asp Ala Leu Glu Leu Cys Asn Arg  
 325 330 335  
 Ile Ser Asp Ala Ile Asp Arg Val Asp His Met Phe Thr Leu Glu Phe  
 340 345 350  
 Asp Ala Glu Val Glu Glu Ser Glu Ser Ala Thr Leu Gln Gln Tyr Tyr  
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 Arg Glu Ala Met Ile Gln Gly Tyr Asn Phe Gly Phe Glu Tyr His Lys  
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 Glu Val Val Arg Leu Met Ser Gly Glu Phe Arg Gln Lys Ile Gly Asp  
 385 390 395 400  
 Lys Tyr Ile Thr Phe Ala Gln Lys Trp Met Asn Tyr Val Leu Thr Lys  
 405 410 415  
 Cys Glu Ser Gly Arg Gly Thr Arg Pro Arg Trp Ala Thr Gln Gly Phe  
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 Asp Phe Leu Gln Ala Ile Glu Pro Ala Phe Ile Ser Ala Leu Pro Glu  
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 Asp Asp Phe Leu Ser Leu Gln Ala Leu Met Asn Glu Cys Ile Gly His  
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 Val Ile Gly Lys Pro His Ser Pro Val Thr Ala Ile His Arg Asn Ser  
 465 470 475 480  
 Pro Arg Pro Val Lys Val Pro Arg Cys His Ser Asp Pro Pro Asn Pro  
 485 490 495  
 His Leu Ile Ile Pro Thr Pro Glu Gly Phe Arg Gly Ser Ser Val Pro  
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 Glu Asn Asp Arg Leu Ala Ser Ile Ala Ala Glu Leu Gln Phe Arg Ser  
 515 520 525  
 Leu Ser Arg His Ser Ser Pro Thr Glu Glu Arg Asp Glu Pro Ala Tyr  
 530 535 540  
 Pro Arg Ser Asp Ser Ser Gly Ser Thr Arg Arg Ser Trp Glu Leu Arg  
 545 550 555 560  
 Thr Leu Ile Ser Gln Thr Lys Asp Ser Ala Ser Lys Gln Gly Pro Ile  
 565 570 575  
 Glu Ala Ile Gln Lys Ser Val Arg Leu Phe Glu Glu Arg Arg Tyr Arg  
 580 585 590  
 Glu Met Arg Arg Lys Asn Ile Ile Gly Gln Val Cys Asp Thr Pro Lys  
 595 600 605  
 Ser Tyr Asp Asn Val Met His Val Gly Leu Arg Lys Val Thr Phe Lys  
 610 615 620  
 Trp Gln Arg Gly Asn Lys Ile Gly Glu Gly Gln Tyr Gly Lys Val Tyr  
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 Thr Cys Ile Ser Val Asp Thr Gly Glu Leu Met Ala Met Lys Glu Ile  
 645 650 655

Arg Phe Gln Pro Asn Asp His Lys Thr Ile Lys Glu Thr Ala Asp Glu  
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 Leu Lys Ile Phe Glu Gly Ile Lys His Pro Asn Leu Val Arg Tyr Phe  
 675 680 685  
 Gly Val Glu Leu His Arg Glu Glu Met Tyr Ile Phe Met Glu Tyr Cys  
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 Asp Glu Gly Thr Leu Glu Glu Val Ser Arg Leu Gly Leu Gln Glu His  
 705 710 715 720  
 Val Ile Arg Leu Tyr Thr Lys Gln Ile Thr Val Ala Ile Asn Val Leu  
 725 730 735  
 His Glu His Gly Ile Val His Arg Asp Ile Lys Gly Ala Asn Ile Phe  
 740 745 750  
 Leu Thr Ser Ser Gly Leu Ile Lys Leu Gly Asp Phe Gly Cys Ser Val  
 755 760 765  
 Lys Leu Lys Asn Asn Ala Gln Thr Met Pro Gly Glu Val Asn Ser Thr  
 770 775 780  
 Leu Gly Thr Ala Ala Tyr Met Ala Pro Glu Val Ile Thr Arg Ala Lys  
 785 790 795 800  
 Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp Ser Leu Gly Cys Val  
 805 810 815  
 Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp His Glu Tyr Glu His  
 820 825 830  
 Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly His Lys Pro Pro Ile  
 835 840 845  
 Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe Leu Ser His Cys Leu  
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 885 890

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 Met Arg Asp Ala Ile Ala Glu Pro Val Pro Pro Pro Ala Leu  
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 Ala Asp Thr Pro Ala Ala Ala Met Glu Glu Leu Arg Pro Ala Pro Pro  
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Pro Gln Pro Glu Pro Asp Pro Glu Cys Cys Pro Ala Ala Arg Gln Glu	
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Cys Met Leu Gly Glu Ser Ala Arg Lys Ser Met Glu Ser Asp Pro Glu	
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Asp Phe Ser Asp Glu Thr Asn Thr Glu Thr Leu Tyr Gly Thr Ser Pro	
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Pro Ser Thr Pro Arg Gln Met Lys Arg Leu Ser Ala Lys His Gln Arg	
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Val Asp Leu Asn Lys Pro Tyr Leu Ser Leu Gly Cys Ser Asn Ala Lys	
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 1490 1495 1500

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5414

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&lt;211&gt; 1597

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Leu Gly Glu Ser Ala Arg Lys Ser Met Glu Ser Asp Pro Glu Asp Phe  
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Ser Asp Glu Thr Asn Thr Glu Thr Leu Tyr Gly Thr Ser Pro Pro Ser  
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Gln Asp Leu Phe Leu Tyr Thr Ala Arg Gln Ala Ile Pro Asp Ile Ile  
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Ser Asn Gly Ala Gly Phe Asn Gly Pro Leu Val Glu Gly Gln Cys Arg

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Ala Leu Cys Leu Trp Leu Asn Ile Thr Lys Asp Leu Asn Gln Lys Leu						
		385		390		395
Arg Ile Met Gly Thr Val Leu Gly Ile Lys Asn Leu Ser Asp Ile Gly						
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Trp Pro Val Phe Glu Ile Pro Ser Pro Arg Pro Ser Lys Gly Tyr Glu						
		420		425		430
Pro Glu Asp Glu Val Glu Asp Thr Glu Val Glu Leu Arg Glu Leu Glu						
		435		440		445
Ser Gly Thr Glu Glu Ser Asp Glu Glu Pro Thr Pro Ser Pro Arg Val						
		450		455		460
Pro Glu Leu Arg Leu Ser Thr Asp Thr Ile Leu Asp Ser Arg Ser Gln						
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Ile Gly Trp Gly Thr Ala Asp Cys Gly Pro Glu Ala Ser Arg His Cys						
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Gln Leu Val Arg Glu Cys Lys Glu Val Leu Lys Gly Gly Leu Leu Met						
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Lys Gln Tyr Tyr Gln Phe Met Leu Gln Glu Val Leu Gly Gly Leu Glu						
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 Trp Thr Ser Ala Asp Asp Asn Gly Ala Ala Asp Glu Leu Arg Arg Ser  
 770 775 780  
 Val Ile Glu Ile Ser Arg Ala Leu Lys Glu Leu Phe His Glu Ala Arg  
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 Glu Arg Ala Ser Lys Ala Leu Gly Phe Ala Lys Met Leu Arg Lys Asp  
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 Leu Glu Ile Ala Ala Glu Phe Val Leu Ser Ala Ser Ala Arg Glu Leu  
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 Leu Asp Ala Leu Lys Ala Lys Gln Tyr Val Lys Val Gln Ile Pro Gly  
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 Leu Glu Asn Leu His Val Phe Val Pro Asp Ser Leu Ala Glu Glu Lys  
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 Lys Ile Ile Leu Gln Leu Leu Asn Ala Ala Thr Gly Lys Asp Cys Ser  
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 Lys Asp Pro Asp Asp Val Phe Met Asp Ala Phe Leu Leu Leu Thr Lys  
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 His Gly Asp Arg Ala Arg Asp Ser Glu Asp Gly Trp Gly Thr Trp Glu  
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 Ala Arg Ala Val Lys Ile Val Pro Gln Val Glu Thr Val Asp Thr Leu  
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 Arg Ser Met Gln Val Asp Asn Leu Leu Leu Val Val Met Glu Ser Ala  
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 His Leu Val Leu Gln Arg Lys Ala Phe Gln Gln Ser Ile Glu Gly Leu  
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 Met Thr Val Arg His Glu Gln Thr Ser Ser Gln Pro Ile Ile Ala Lys  
 965 970 975  
 Gly Leu Gln Gln Leu Lys Asn Asp Ala Leu Glu Leu Cys Asn Arg Ile  
 980 985 990  
 Ser Asp Ala Ile Asp Arg Val Asp His Met Phe Thr Leu Glu Phe Asp  
 995 1000 1005  
 Ala Glu Val Glu Glu Ser Glu Ser Ala Thr Leu Gln Gln Tyr Tyr Arg  
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 Glu Ala Met Ile Gln Gly Tyr Asn Phe Gly Phe Glu Tyr His Lys Glu  
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Val Val Arg Leu Met Ser Gly Glu Phe Arg Gln Lys Ile Gly Asp Lys  
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 Tyr Ile Ser Phe Ala Gln Lys Trp Met Asn Tyr Val Leu Thr Lys Cys  
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 Glu Ser Gly Arg Gly Thr Arg Pro Arg Trp Ala Thr Gln Gly Phe Asp  
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 Phe Leu Gln Ala Ile Glu Pro Ala Phe Ile Ser Ala Leu Pro Glu Asp  
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 Ile Gly Lys Pro His Ser Pro Val Thr Ala Ile His Arg Asn Ser Pro  
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 Ser Val Pro Glu Asn Asp Arg Leu Ala Ser Ile Ala Ala Glu Leu Gln  
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 Phe Arg Ser Leu Ser Arg His Ser Ser Pro Thr Glu Glu Arg Asp Glu  
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 Gly Pro Ile Glu Ala Ile Gln Lys Ser Val Arg Leu Phe Glu Glu Arg  
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 Thr Pro Lys Ser Tyr Asp Asn Val Met His Val Gly Leu Arg Lys Val  
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 Thr Phe Lys Trp Gln Arg Gly Asn Lys Ile Gly Glu Gly Gln Tyr Gly  
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 1365 1370 1375  
 Ala Asp Glu Leu Lys Ile Phe Glu Gly Ile Lys His Pro Asn Leu Val  
 1380 1385 1390  
 Arg Tyr Phe Gly Val Glu Leu His Arg Glu Glu Met Tyr Ile Phe Met



1395                      1400                      1405  
 Glu Tyr Cys Asp Glu Gly Thr Leu Glu Glu Val Ser Arg Leu Gly Leu  
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 Gln Glu His Val Ile Arg Leu Tyr Thr Lys Gln Ile Thr Val Ala Ile  
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 Asn Val Leu His Glu His Gly Ile Val His Arg Asp Ile Lys Gly Ala  
                     1445                      1450                      1455  
 Asn Ile Phe Leu Thr Ser Ser Gly Leu Ile Lys Leu Gly Asp Phe Gly  
                     1460                      1465                      1470  
 Cys Ser Val Lys Leu Lys Asn Asn Ala Gln Thr Met Pro Gly Glu Val  
                     1475                      1480                      1485  
 Asn Ser Thr Leu Gly Thr Ala Ala Tyr Met Ala Pro Glu Val Ile Thr  
                     1490                      1495                      1500  
 Arg Ala Lys Gly Glu Gly His Gly Arg Ala Ala Asp Ile Trp Ser Leu  
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 Gly Cys Val Val Ile Glu Met Val Thr Gly Lys Arg Pro Trp His Glu  
                     1525                      1530                      1535  
 Tyr Glu His Asn Phe Gln Ile Met Tyr Lys Val Gly Met Gly His Lys  
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 Pro Pro Ile Pro Glu Arg Leu Ser Pro Glu Gly Lys Ala Phe Leu Ser  
                     1555                      1560                      1565  
 His Cys Leu Glu Ser Asp Pro Lys Ile Arg Trp Thr Ala Ser Gln Leu  
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 His Val Gly Leu Arg  
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 <223> N at postions 6,12,and 15 = Inosine  
  
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 <223> N at postion 20 = g or t  
  
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 ttngcncnt tnatrtcnen rtg 23  
  
  
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Ala Ile His Asp  
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